Patent Application of

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For

PERSONAL FLOTATION DEVICE

BACKGROUND

This invention relates to personal flotation devices (PFD), specifically the inflated type of devices that are user or assist operated. It is usually impractical for participants of many active water sports to wear any type of life jackets even when they are in open water. In many of the physically demanding water sports as surfing, diving, swimming and sailing PFD are not used usually, because, they hamper body movements and interfere with their equipment. Surfing is a popular water sports that many participants are drowned each year. Flotation devices are likewise not practical for use by swimmers and divers. Scuba divers are often lost to drowning because there was no last line of protection. It is unlikely that aircraft emergency landing or crashes will allow time or the stability to put on life vests. In event of a hard ground landing the PFD will afford limited air bag protection. Many PFD provided by manufacturers are worn around the waist either in boxes or in the belt. After inflation most all of these PFD require the wearer to get into openings or buckle straps. When the victim is reached for rescue most PFD interfere with the efforts and must be removed for resuscitation.

The U.S. Pat. NO. 5,823,840 to Powers (1998) is an example of a PFD that the user wears on the wrist and is inflated in place, however, deployment requires that both hands to be momentary occupied. This is time that the wearer is not likely to have and if successfully deployed will be only hold the attached hand at the surface. An example of a PFD that the user wears on the arm is U.S. Pat. NO. 6,056,612 to Markwitz (2000) still more are ones that the user wears in a box on a waistline belt are the U.S. Pat. NO. 5,738,557 to Biesecker (1998), U.S. Pat. NO. 5,820,431 to Biesecker (1998) and also to Bisecker is U.S. Pat. NO. 6,004,177 (1999). A combination waist belt and shoulder PFD is the U.S. Pat. NO. 6,036,562 to Brown (2000)and continued to U.S. Pat.

NO. 6,394,866 to Brown (2002), A PFD shown in U.S. Pat. NO. 5,779,512 to Rupert(1998) provides for concentrically joined rings to be inflated and worn at times for therapeutic swims. A transparent PFD for sun tanning purposes is seen in U.S. Pat. NO. 6,007,395 to Knoll (1999).

SUMMARY

The invention, is an improved PFD is flexible protective tube shell with caps urged over and preferably sealed onto each end, each cap end having a clasp and preferably worn as a necklace by joining the clasps on each end. The flexible tube shell has an longitudinal groove and a distensible sack comprised of one or more cells, each with a gas source connected to an end opening is disposed internally longitudinally in the tube. Each cell is connected internally to a cap containing a gas source. The gas source may be either a chemical gas generator or a compressed gas cartridge.

A PFD that provides air bag cushion is achieved when either the wearer or a rescuer by means pulls any place around the clasped "necklace" with enough force to un-seat the end caps from the tube. This by means of a trigger releases gas from the gas generator or gas cartridge to fill each cell that expand outward with adequate pressure to cause the flexible tube shell to be split along the longitudinal groove and is jettisoned.

To improve visibility the sack ideally will be a visible color and radar reflective. Another aspect of the invention is that the outside of protective shell PFD could be decorated that would encourage use.

Accordingly several objects and advantages of the invention provide a PFD with broader use applications.

DRAWINGS

FIG. 1 is a prospective view of the PFD when relaxed.

FIG. 2 is a prospective view of the PFD in clasped position.

FIG. 3 is a prospective view of the PFD inflated showing tube jettisoned.

FIG. 4 is a section view taken **4-4**

FIG. 5 is a section view taken **5-5**

DESCRIPTION

FIG. 1 is a view of a PFD **1** in accordance with the invention having a flexible tube shell **2** with tab end cap **3** and opposite end receptacle end cap **6** each preferably sealed to the end of flexible tube shell **2**. A long **10** sack comprised of cells **4** having two opposite ends each containing gas source **5** is disposed in flexible tube shell **2**.

FIG. 2 is a view of the **PFD 1** by means bent to permit the tab end cap **2** being coupled to a receptacle end cap **6** providing a clasp **16** in semi- encircling Taurus ring **8** circumscribing a neck area **30**.

FIG. 3 is an orthographic view of the **PFD 1** shown having been caused to inflate when encircling ring **8** is by means stretched causing the tube shell **2** end portion **9** each to be respectively withdrawn from tab end cap **3** and the receptacle end cap **6**. The internal stress created by the inflating cells **4** causes tube shell **2** to split provided along groove **7** and is jettisoned **11**. The invention a PDF (personal flotation device) and air bag is demonstrated when filled cells **4** having a couple clasp **16** is circumscribing a neck area **30** provide buoyancy and cushion.

FIG. 4 is a section view showing the typical end cap layout and compressed gas trigger device **18**. External surface of end portion **9** is closely fitted to the internal surface **23** of end cap **3** and an open end portion external surface **21** of cell **4** is joined and sealed to internal surface **21**. The Service loop **20** provides slack so the tube shell **2** end portions **9** can be forcibly withdrawn

respectively from tab end cap **3** and receptacle cap **6**. Housing **28** is retained to the gas cartridge **22** and detent dog **32** is biased by inside wall of tube shell **2** to retain pierce plunger **26** and hold spring **30** in compression.

FIG. 5 is a section view showing trigger device **18** and also a section of tube wall **2** into having a longitudinal groove **7**.

FIG. 6 when detent dog **32** is released allowing pierce plunger to be driven by spring **30** into membrane **24** thereby releasing compressed gas from gas source **5** to fill cell **4**. This is repeated at the opposite end thereby providing a redundant feature and a PFD **1** according to the invention.